

NMED DOE Oversight Bureau



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**WATER-QUALITY CHANGE DUE
TO THE CERRO GRANDE FIRE,
AND ITS
POTENTIAL USE AS A
RECHARGE TRACER**

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Presented at GSA, May 1, 2001

PURPOSE/OBJECTIVE

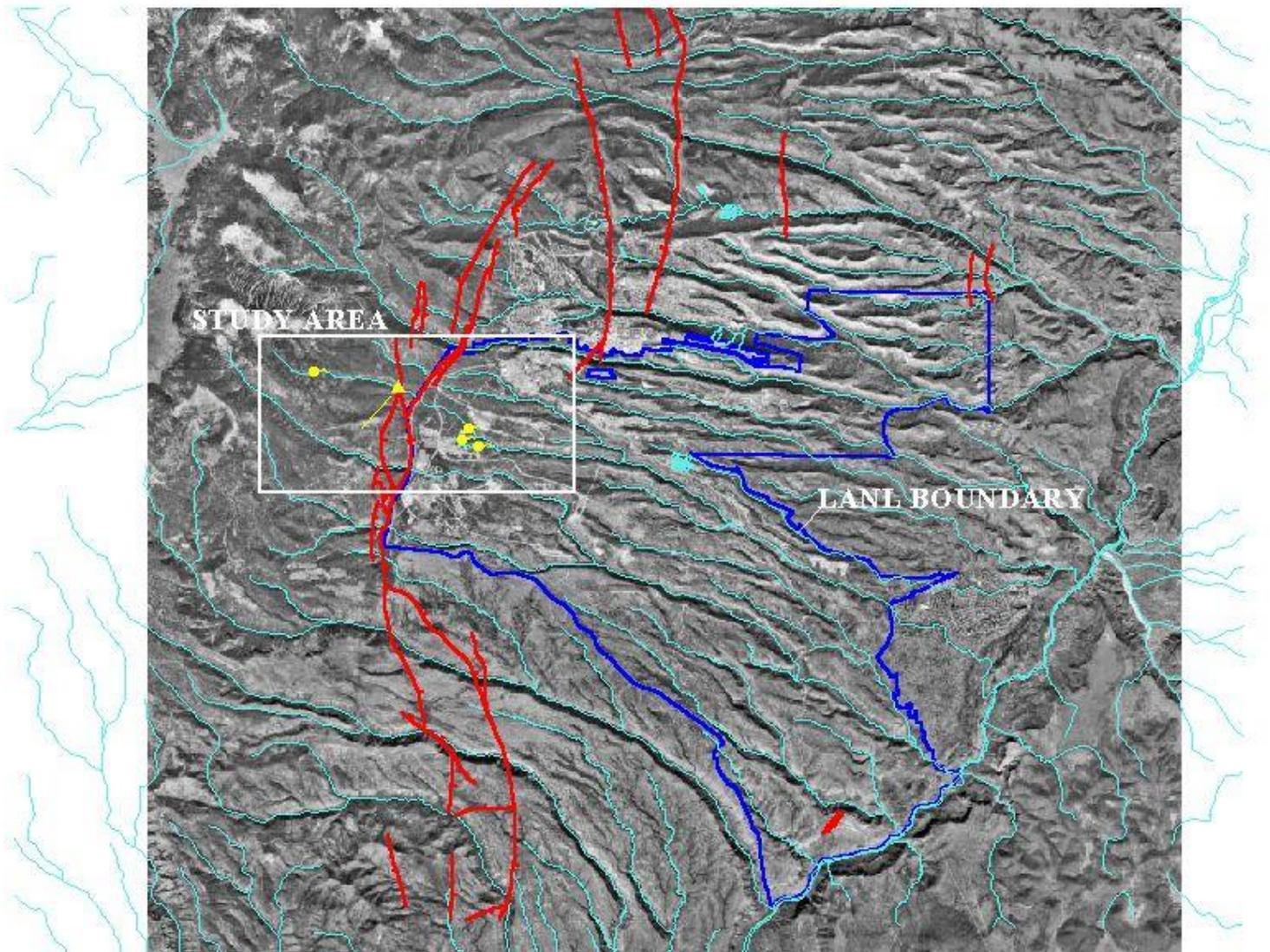


- Pre-fire: Determine the connectivity between perennial surface waters east of the Pajarito fault zone and downgradient springs to the west
- Post-fire: Assess the changes in water quality due to the fire and trace the fire-impacted surface waters through the fault zone

IMPORTANCE OF STUDY



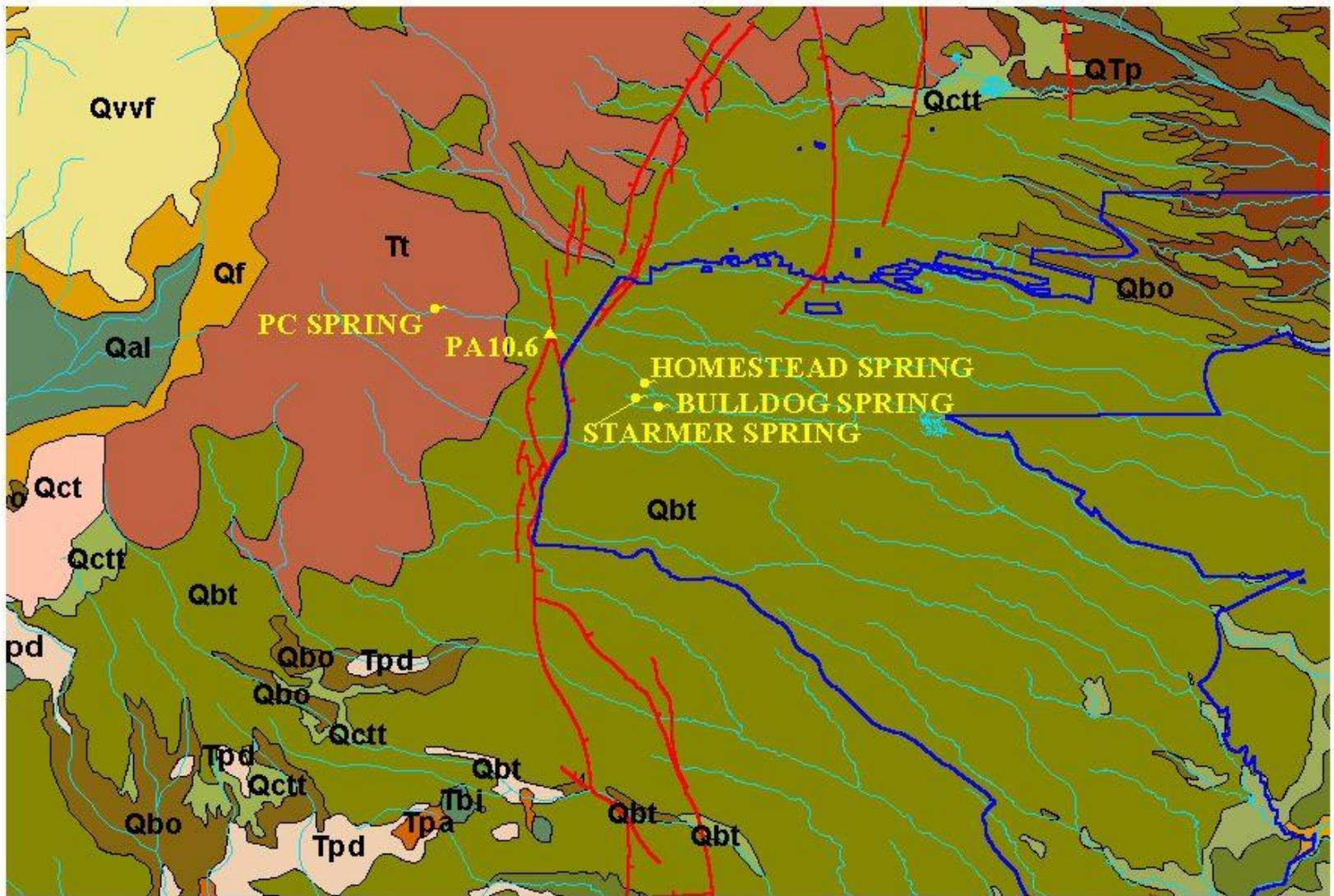
- Decrease the amount of hydrogeologic uncertainty (recharge, discharge, flow velocity, contaminant residence times, etc.)
- Assess the fate and transport of anthropogenic and naturally produced contaminants
- Water-resource management (quantity/usable?)
- Support Modeling of ground-water flow (input parameters, etc.)
- Previous information is sparse



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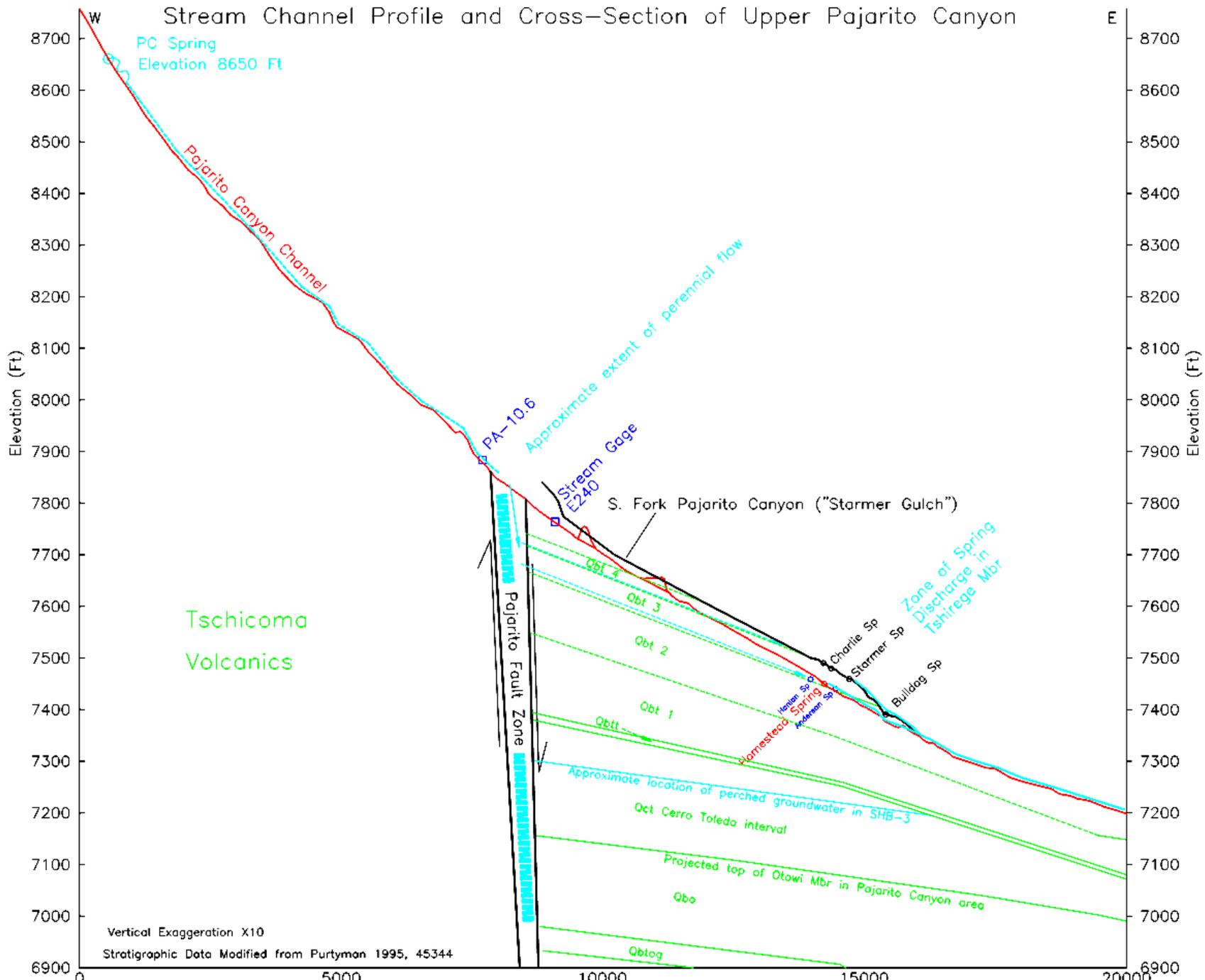
10 Miles

REGIONAL MAP SHOWING STUDY AREA



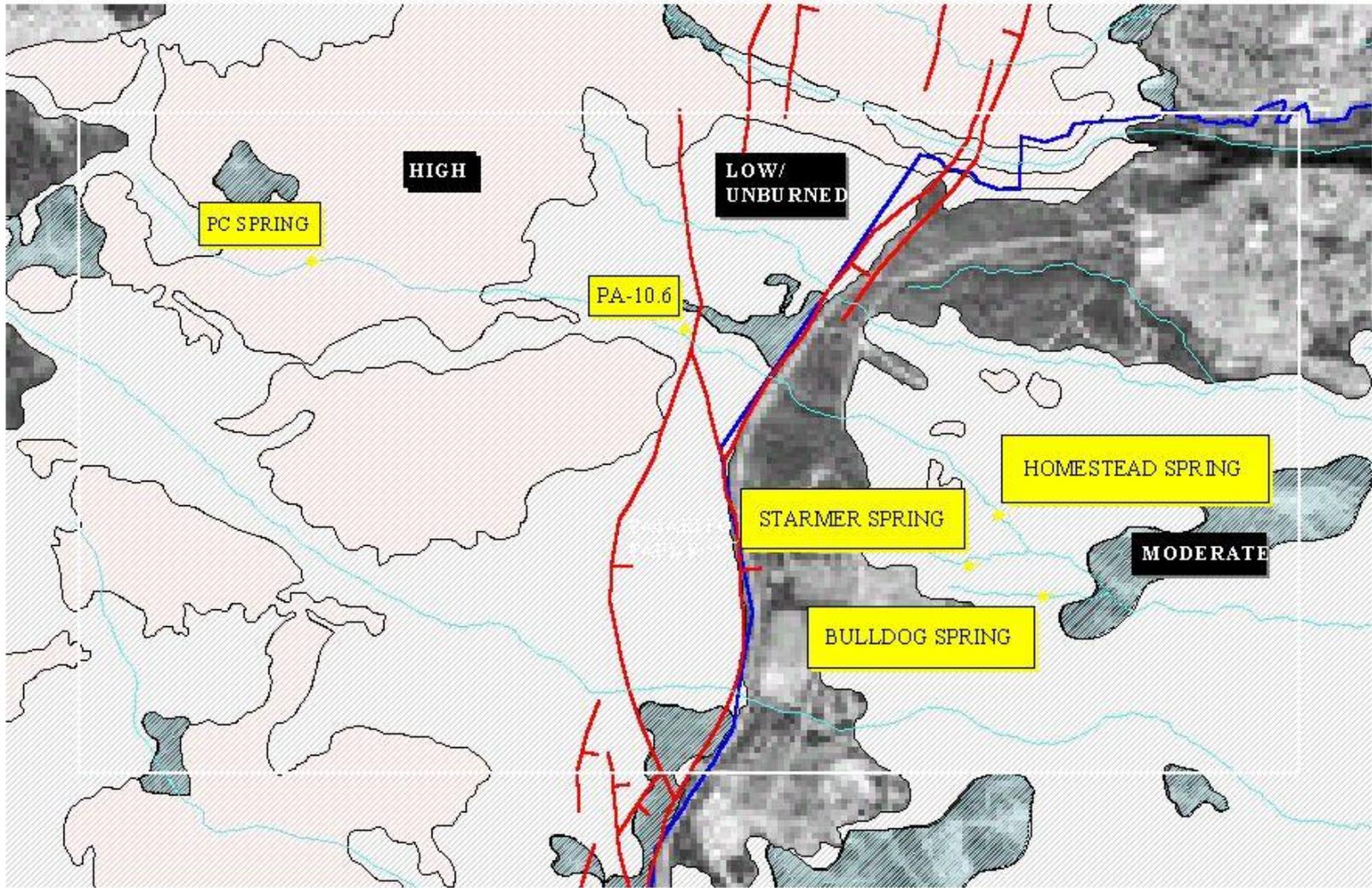
GEOLOGY OF STUDY AREA

Stream Channel Profile and Cross-Section of Upper Pajarito Canyon



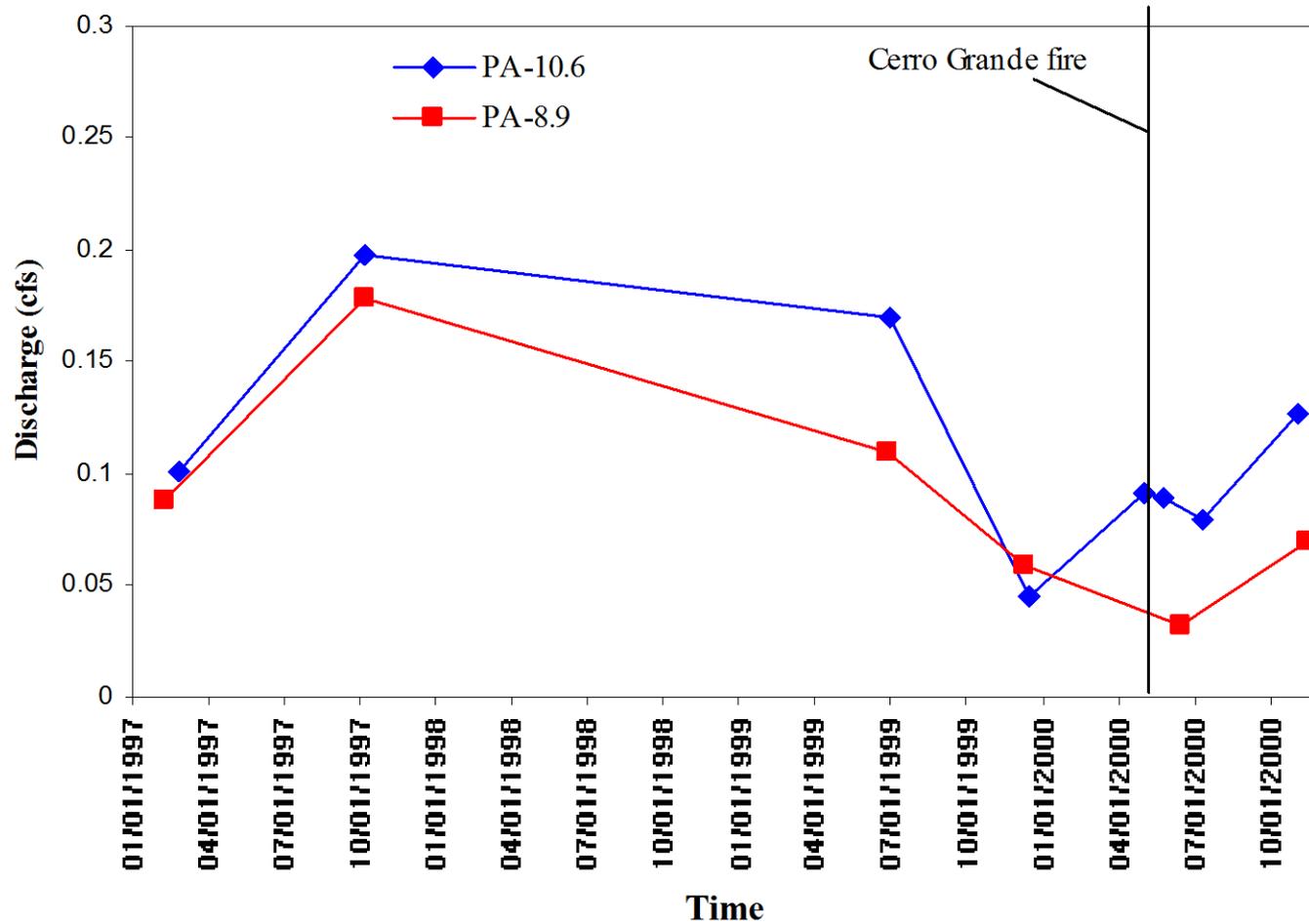




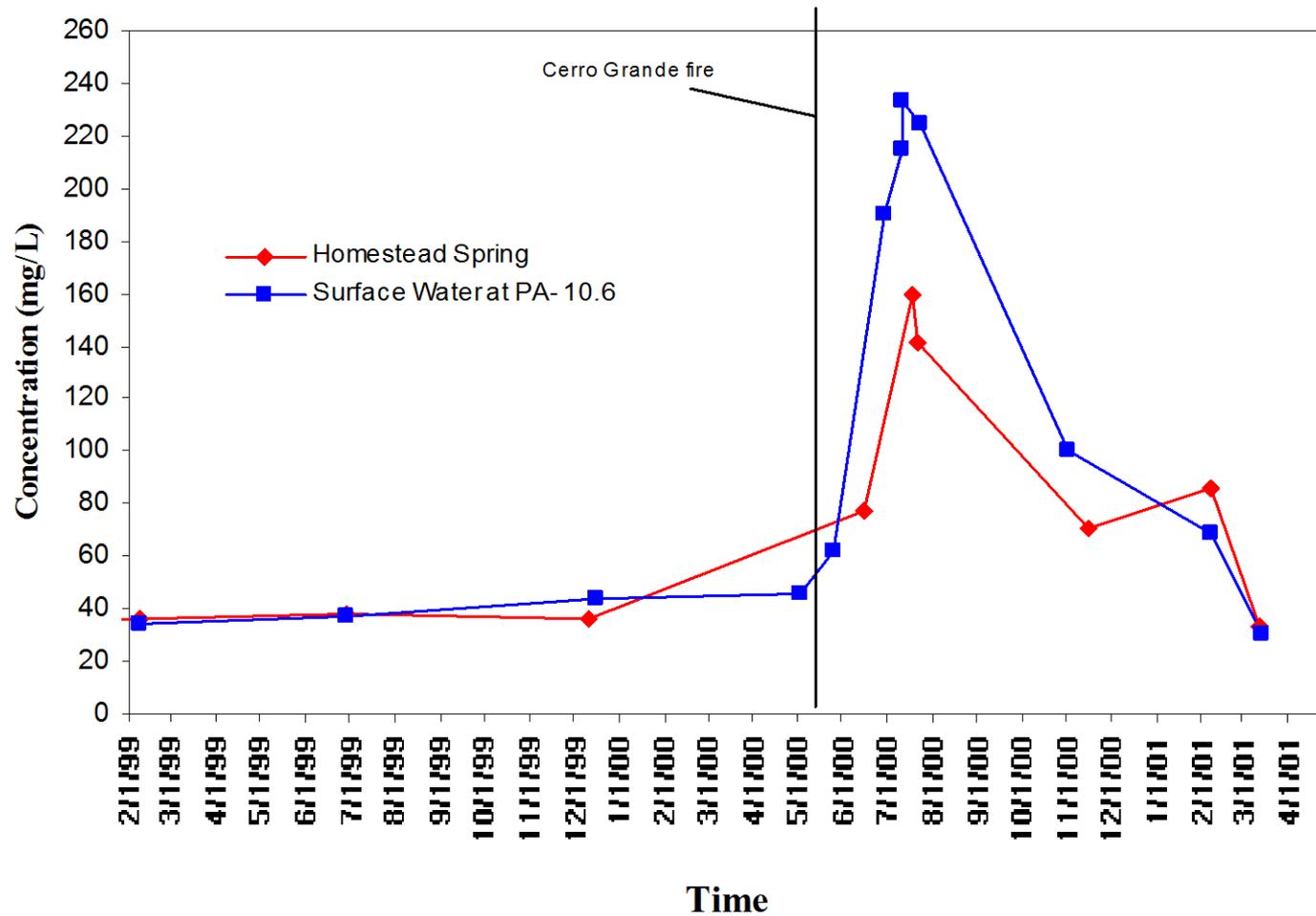


STUDY AREA SHOWING BURN SEVERITY AND SAMPLING LOCATIONS

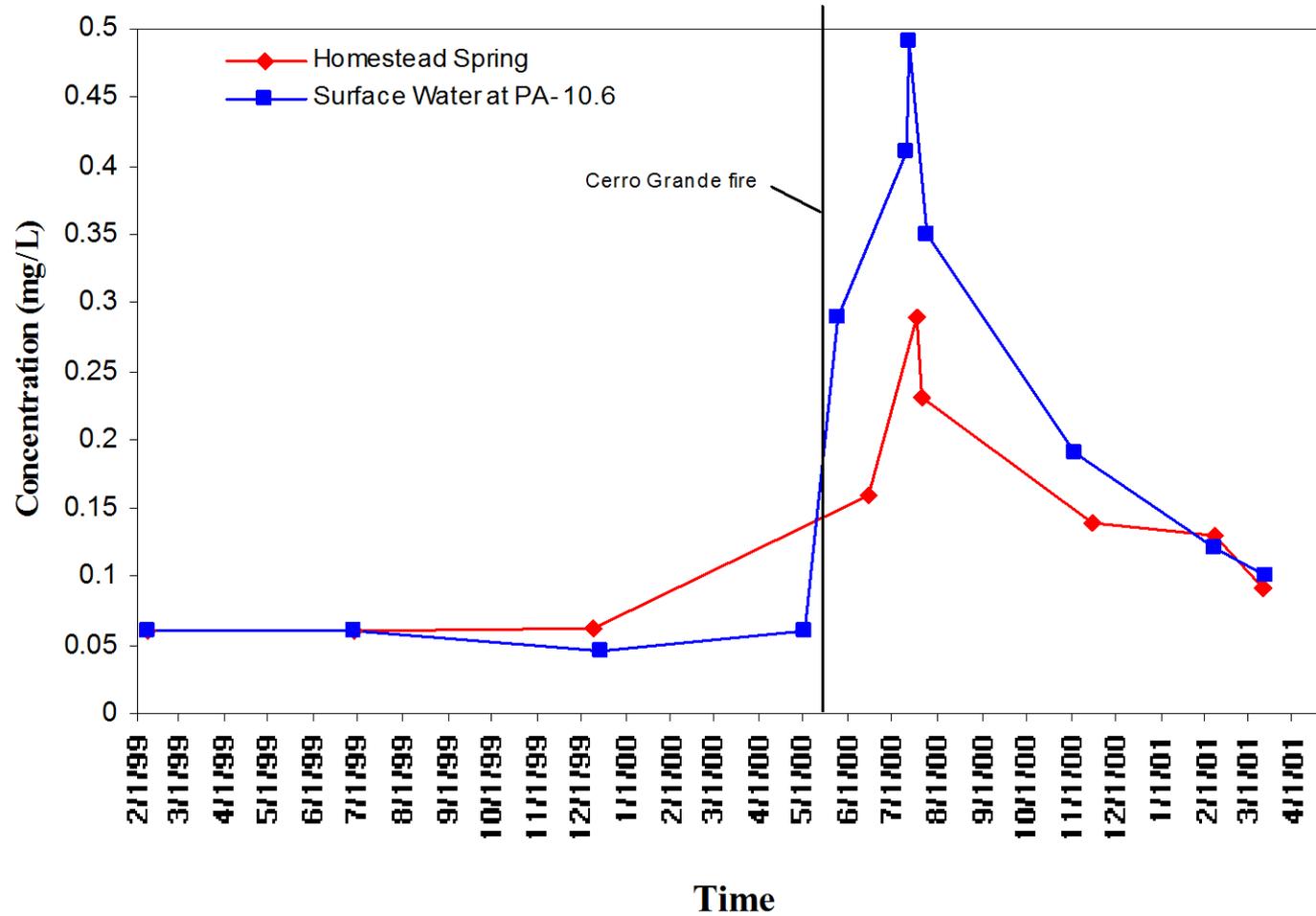
Comparison of Discharge Rates Through Time for Surface-Water Stations PA-10.6 and PA-8.9



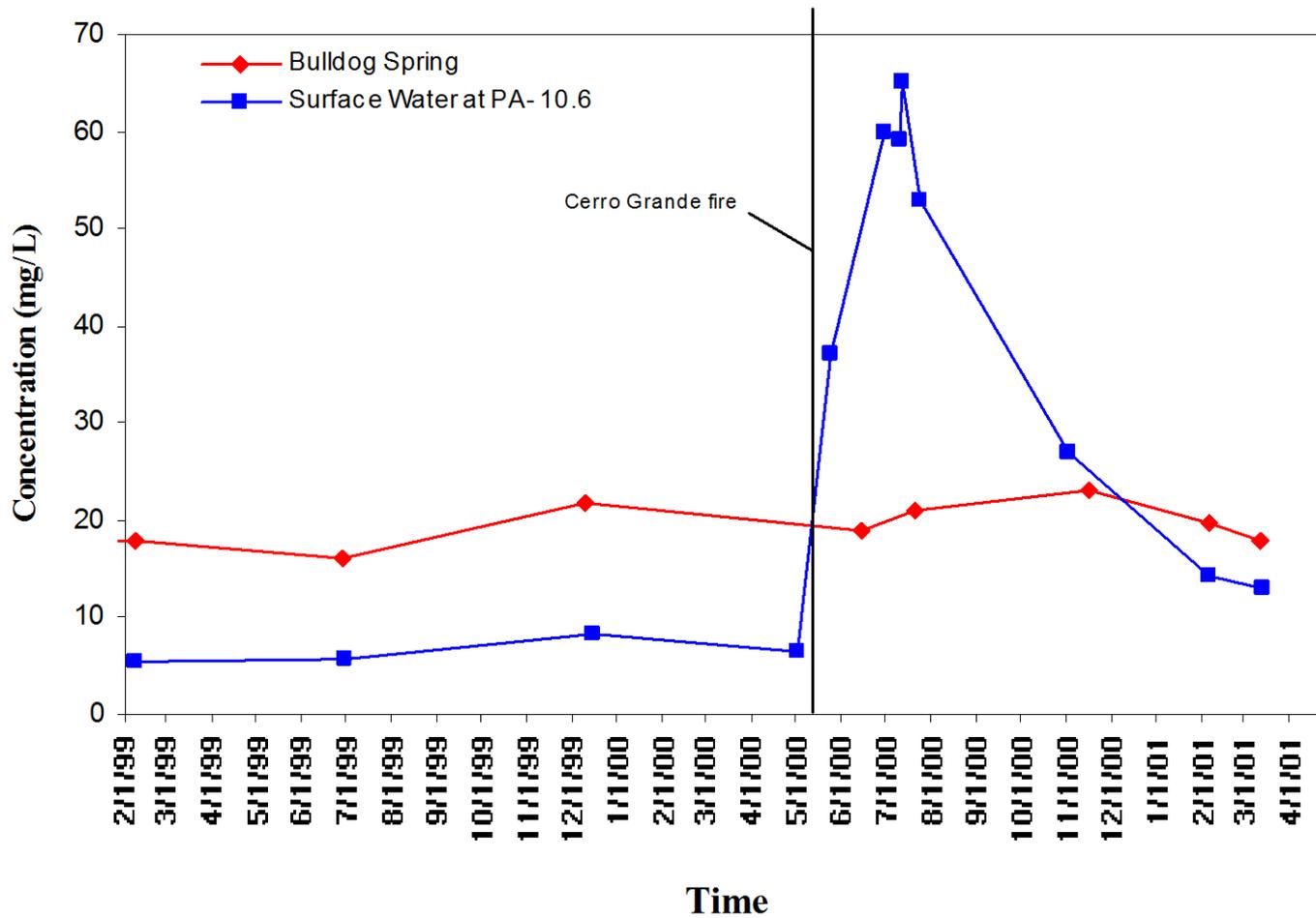
Bicarbonate Concentrations Through Time at Homestead Spring and Surface-Water Station PA-10.6



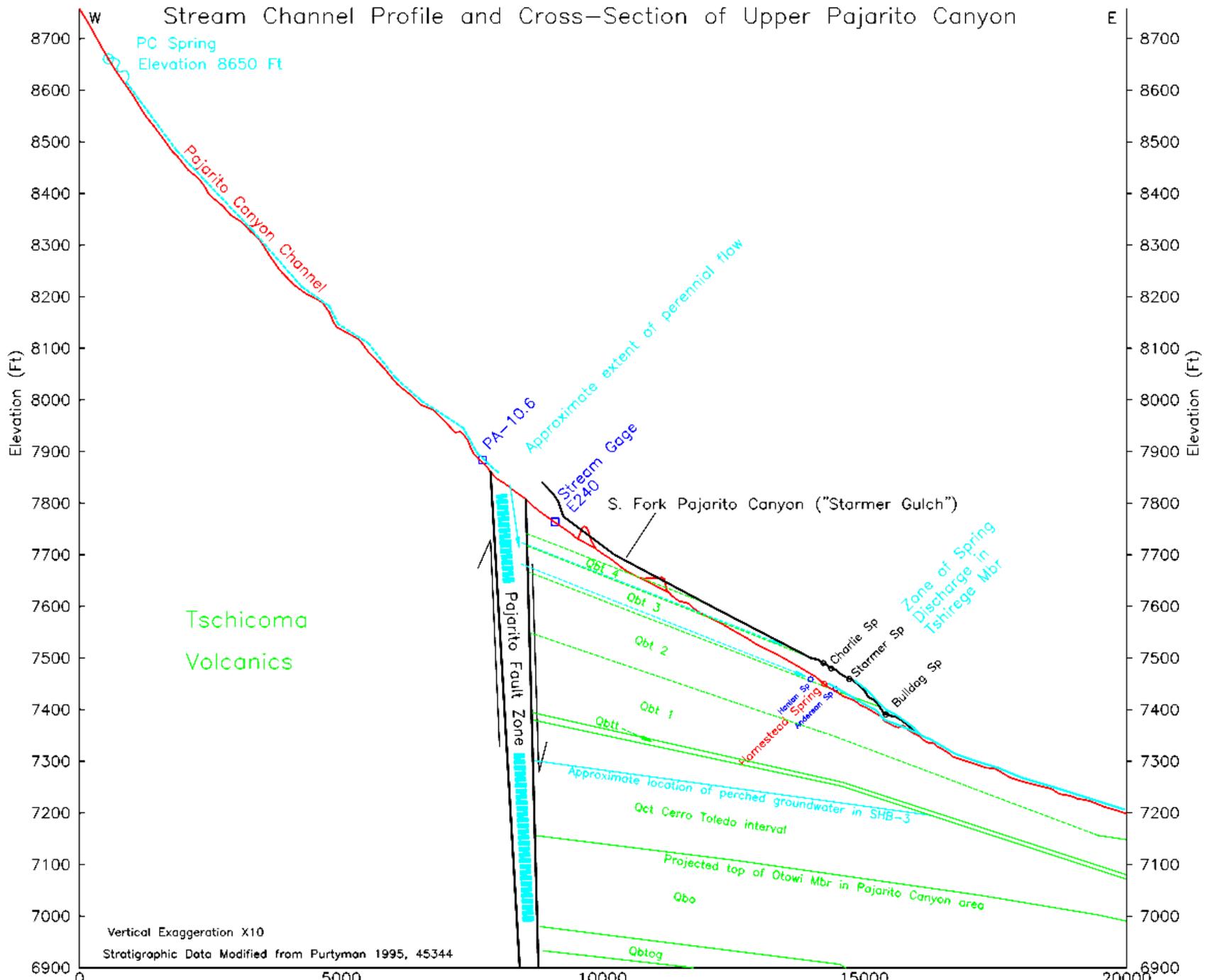
Dissolved Strontium Concentrations Through Time at Homestead Spring and Surface-Water Station PA-10.6



Dissolved Calcium Concentrations Through Time at Bulldog Spring and Surface-Water Station PA-10.6



Stream Channel Profile and Cross-Section of Upper Pajarito Canyon



CONCLUSIONS



- Connectivity was determined
- Water-balance data indicate that the fault zone may play a major role in shallow recharge versus deep recharge
- Ground-water flow velocities through the system appear to be less than one month

CONCLUSIONS cont'd



- Bulldog Spring probably has different recharge sources (i.e., outfalls, Cañon de Valle?)
- Fire-related impacts on water quality decreased during the winter
- Information/data will support modeling ground-water flow and contaminant transport

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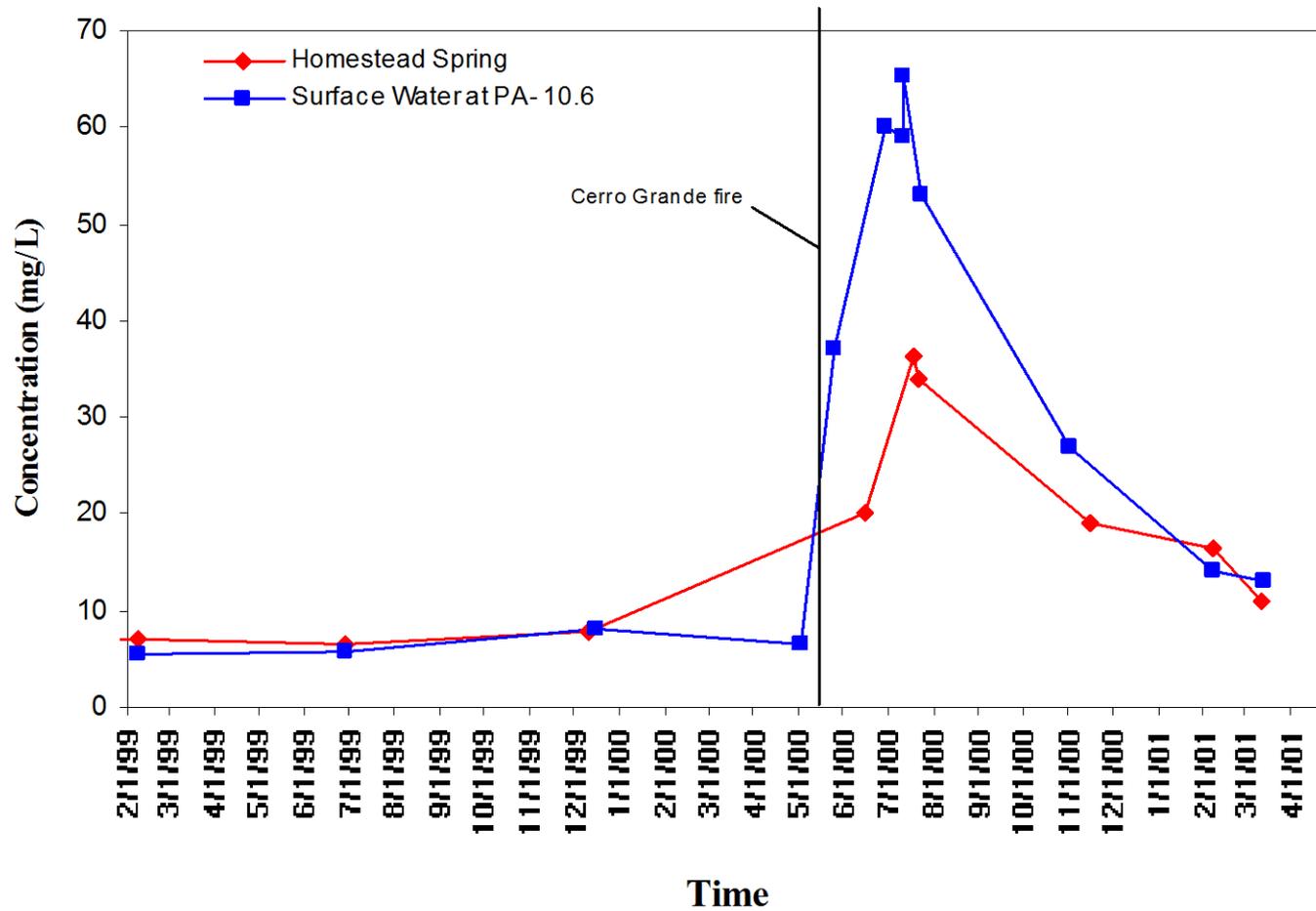


Acknowledgements

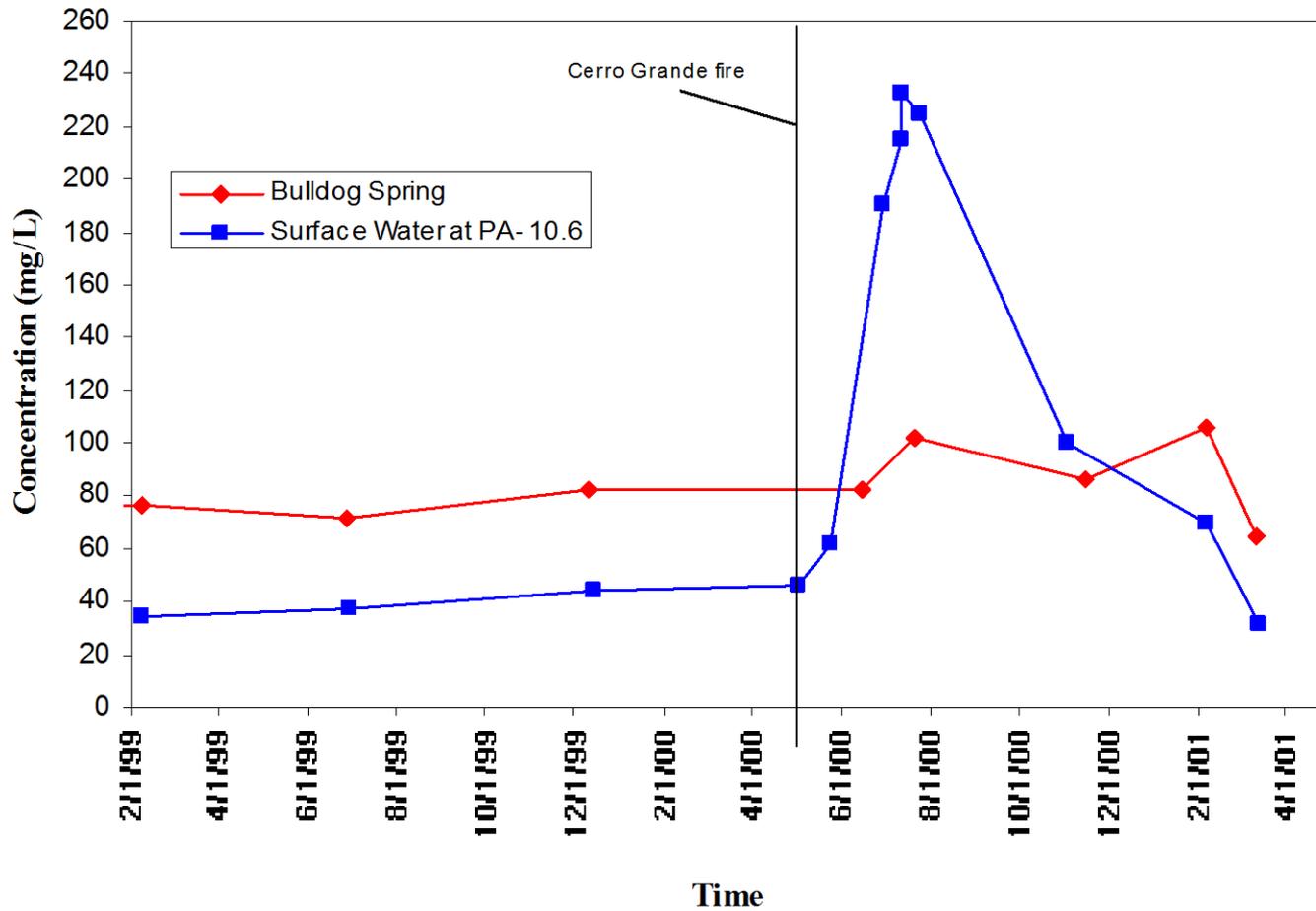
NMED: John Parker, Ralph Ford-Schmid,
and David Englert

LANL: Pat Longmire, Dale Counce, Bill
Stone and Rich Koch

Dissolved Calcium Concentrations Through Time at Homestead Spring and Surface-Water Station PA-10.6



Bicarbonate Concentrations Through Time at Bulldog Spring and Surface-Water Station PA-10.6



Dissolved Strontium Concentrations Through Time at Bulldog Spring and Surface-Water Station PA-10.6

